

Project 9: Targeting Mineral Systems in Covered Terranes

Program Leader:

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Timing:

Phase 1:

1 January 2019 - 31 December 2021

Cash Funding:

\$1,244,600

Project Participants:

Research Participants:

- CSIRO
- The University of Adelaide
- The University of South Australia
- The University of Newcastle

Geological Survey Participants:

- Geological Survey of New South Wales
- Geological Survey of South Australia
- Geological Survey of Western Australia
- Geoscience Australia
- Geological Survey of Queensland
- Geological Survey of Victoria
- Mineral Resources Tasmania
- Northern Territory Geological Survey

Project Summary:

The National Drilling Initiative (NDI) mission is to drill multiple holes in several case study areas to map the regional geology and architecture and define the potential for mineral systems in 3D.

The NDI provides an opportunity to change our approach to mineral exploration targeting – taking advantage of MinEx CRC's national collaboration, ten-year life, continent-scale perspective and access to many thousands of meters of drilling. The NDI provides a unique opportunity to (1) systematically collect large (multi-scale), comprehensive, and diverse data sets; (2) deploy fit-for-purpose data- and geoscience analytical techniques designed to identify and map mineral system footprints within cover and underlying basement; and (3) apply a suite of mineral systems mapping tools designed to identify and prioritise areas of high prospectivity. These form the parts of a Mineral Systems Analysis and exploration workflow which we will develop and deploy in Project 9 with application beyond the scope of the NDI.

Phase 1 Objectives:

- Create a new generation of multi-scale (province, district and camp scale) exploration targeting models for selected mineral systems, that represent and quantify the spatial variations in architectural, stratigraphic, geophysical, geochemical, mineralogical and isotopic (collectively geological) characteristics of each mineral system type.
- Integrate temporal and spatial geoscientific data for specified regions with existing understanding of mineral systems to create maps of mineral potential, using data- and knowledge-driven prospectivity mapping techniques.
- Provide advice on the most valuable data types, sampling media and sampling densities to map footprints of relevant mineral systems.
- Test exploration targeting models and mineral potential maps by utilizing MinEx CRC drilling technology and research.